WHAT IS CLAIMED IS:

1. A method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal by a laser FZ method using a raw material rod of paramagnetic garnet containing at least Tb and Al and a seed crystal, the method comprising :

providing a melt-joined raw material rod and seed crystal, wherein at least one of the raw material rod and the seed crystal is porous;

heat-melting the joint of the seed crystal and the raw material rod by application of optical energy thereto so as to prepare a melt zone; and

cooling the resulting melt zone.

2. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, wherein the density relative to theoretical density of the raw material rod and seed crystal are different and one of the raw material rod and the seed crystal has a relative density of about 55% to 100% , and the other has a relative density of about 55% to 85% .

3. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 2, wherein the seed crystal has a relative density of about 55% to 85% or less and the raw material rod has a density of relative 55% to 100% and the seed crystal has a lower density than the raw material rod.

4. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim3, wherein the seed crystal is a $Tb_3Al_5O_{12}$ single crystal, a $Tb_3Al_5O_{12}$ polycrystal or $Y_3Al_5O_{12}$.

5. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 4, wherein the raw material rod comprises $Tb_3Al_5O_{12}$ or $(RTb)_3Al_5O_{12}$ in which R represents at least one rare-earth element.

6. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 5, wherein the joint of the raw material rod and the seed crystal is heat-melted by application of CO_2 gas laser light thereto.

7. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 6, wherein the laser light is condensed before the CO_2 gas laser light is applied to the joint of the raw material rod and the seed crystal.

8. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, wherein the seed crystal is a $Tb_3Al_5O_{12}$ single crystal, a $Tb_3Al_5O_{12}$ polycrystal or $Y_3Al_5O_{12}$.

9. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 8, wherein the raw material rod comprises $Tb_3Al_5O_{12}$ or $(RTb)_3Al_5O_{12}$ in which R represents at least one rare-earth element) .

10. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 9, wherein the joint of the raw material rod and the seed crystal is heat-melted by application of CO_2 gas laser light thereto.

11. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 10, wherein the laser light is condensed before the CO_2 gas laser light is applied to the joint of the raw material rod and the seed crystal.

12. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, wherein the raw material rod

comprises $Tb_3Al_5O_{12}$ or $(RTb)_3Al_5O_{12}$ in which R represents at least one rare-earth element.

13. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 12, wherein R is selected from the group consisting of Y, Dy, Ho, Er and Tm.

14. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, wherein the joint of the raw material rod and the seed crystal is heat-melted by application of CO_2 gas laser light thereto.

15. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 15, wherein the laser light is condensed before the CO_2 gas laser light is applied to the joint of the raw material rod and the seed crystal.

16. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, further comprising melt-joining the raw material rod and seed crystal.

17. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 1, further comprising preparing the raw material rod and seed crystal.

18. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 17, wherein the raw material rod and seed crystal are prepared such that their densities relative to theoretical density are different and one of the raw material rod and the seed crystal has a relative density of about 55% to 100% , and the other has a relative density of about 55% to 85% .

19. The method for manufacturing a terbium aluminum-based paramagnetic garnet single crystal according to Claim 18, wherein the raw material

rod and seed crystal are prepared such that the relative density of the seed crystal is smaller than the relative density of the raw material rod.